

Teacher Creativity in Improving Children's Counting Ability Through the Congklak Game at TK Jabal Nur

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ABSTRACT

This study aims to describe teacher creativity in improving children's numeracy skills through the congklak game at TK Jabal Nur. The study employed a qualitative approach with a descriptive design to obtain an in-depth understanding of the learning process, the teacher's role, and the development of children's numeracy skills through the congklak game. This design was selected because it enables researchers to describe participants' experiences and classroom practices in their natural setting rather than to test hypotheses or determine causal relationships. The research involved one teacher and 20 Group B children aged 5–6 years who were selected purposively based on their participation in congklak-based learning activities. Data were collected through observations, semi-structured interviews, and documentation. The data were analyzed using the Miles and Huberman interactive model, including data reduction, data display, and conclusion drawing, while source and technique triangulation were applied to enhance the credibility of the findings. The findings indicate that teacher

creativity was reflected in the design and implementation of engaging congklak-based learning activities that supported children's numeracy development. Children demonstrated greater participation during learning activities and showed progress in recognizing numbers, counting objects, matching numbers with quantities, and understanding number sequences based on classroom observations and assessment records. The learning activities also provided opportunities for children to develop concentration, logical thinking, cooperation, and social interaction through meaningful play experiences. These findings highlight the importance of integrating traditional games into child-centered learning practices and demonstrate how teacher creativity can enrich numeracy learning experiences in early childhood education.

Introduction

Early childhood education constitutes a fundamental foundation in shaping children's cognitive, social, emotional, and motor development comprehensively. One essential cognitive aspect that must be stimulated from an early age is numeracy skills, which serve as the basis for logical and mathematical thinking (Kurniati, 2025). Numeracy skills in early childhood are not limited to recognizing numbers but also include understanding number concepts, classifying, comparing, and solving simple problems. The optimal development of numeracy skills requires learning strategies aligned with children's developmental characteristics, namely meaningful, enjoyable, and contextual play-

based activities (Khusnul Khotimah, 2025). Learning approaches that are overly oriented toward formal exercises often lead to boredom and are less effective in building children's understanding of basic mathematical concepts.

Teachers play a strategic role in designing creative and innovative learning experiences so that children can understand numeracy concepts naturally. Teacher creativity is reflected in the ability to select methods, media, and learning strategies that foster motivation and active engagement among children (Fitriani et al., 2025). Traditional game-based learning represents a relevant alternative because it integrates cultural elements, social interaction, and cognitive activities simultaneously. Traditional games such as congklak possess strong educational potential in stimulating numeracy skills, particularly through activities such as counting seeds, distributing, matching quantities, and understanding number sequences (Lukman, 2025). In addition, this game develops concentration, strategic thinking, and fine motor coordination.

Congklak is widely recognized as a traditional game rich in educational and cultural values. Counting activities in congklak involve complex cognitive processes, including number recognition, simple addition, grouping, and problem-solving. The use of congklak in early childhood learning can create an enjoyable and meaningful learning atmosphere, allowing children to learn without pressure (Tampubolon et al., 2023). Through play, children actively participate, interact with

peers, and naturally develop logical thinking skills. Teacher creativity in modifying game rules, integrating learning objectives, and linking play experiences with mathematical concepts becomes a key factor in the success of the learning process (Laela et al., 2023).

Research on the use of traditional games to improve children's numeracy skills has been widely conducted in recent years. Studies indicate that congklak is effective in enhancing children's understanding of number concepts through concrete counting activities and number sequencing. Other research reveals that implementing congklak significantly improves early numeracy skills compared to conventional methods, as children become more active and enthusiastic in learning (Suryana et al., 2023). Similar findings demonstrate that traditional games help build basic mathematical concepts and enhance numeracy skills through enjoyable and contextual learning experiences. Furthermore, the use of traditional games in early childhood education not only improves numeracy skills but also develops social skills, strategic thinking, and overall learning engagement (Zuhri et al., 2023). Additional studies confirm that congklak contributes to children's cognitive development through the stimulation of thinking activities, concentration, and understanding of number concepts.

These studies demonstrate that traditional games make a positive contribution to the development of early childhood numeracy skills. Play-based learning provides concrete experiences that help children understand mathematical concepts more easily (Khotimah et al., 2023).

Congklak integrates cognitive, social, and emotional activities, resulting in more holistic learning. Previous research also highlights the importance of child-centered learning through play as an approach consistent with the developmental characteristics of early childhood (Erlina et al., 2024).

Although studies on congklak have been widely conducted, most focus primarily on improving numeracy skills from the perspective of media or instructional methods, without deeply examining the role of teacher creativity in designing, modifying, and implementing congklak as an effective learning strategy (Aini et al., 2022). Teacher creativity is a crucial factor because the success of play-based learning depends not only on the learning media but also on the teacher's ability to create meaningful, adaptive, and developmentally appropriate learning experiences. Limited exploration of teacher creativity results in insufficient understanding of how teachers develop traditional game-based learning strategies (Dewi et al., 2023).

In addition, numeracy learning in several early childhood education institutions still tends to rely on conventional, exercise-oriented approaches, leading to limited active participation by children. This condition indicates a gap between play-based learning theory and classroom practice (Anggraeni et al., 2023). Research examining teacher creativity in utilizing congklak as a learning strategy is essential to provide empirical insight into how teachers integrate elements of play, culture, and learning objectives in improving children's numeracy skills

(Astarina et al., 2023).

The novelty of this research lies not merely in the use of the traditional game *congklak* to improve early childhood numeracy skills, as has been explored in previous studies, but in examining how teachers creatively design, adapt, and implement *congklak* as a structured learning strategy within the classroom context at TK Jabal Nur. Unlike earlier research that primarily focused on the effectiveness of traditional games in enhancing numeracy outcomes, this study emphasizes the pedagogical creativity of teachers in integrating *congklak* into learning activities, including the planning of instructional procedures, adaptation of game rules to children's developmental needs, and facilitation of meaningful mathematical learning experiences. This perspective provides a deeper understanding of the teacher's role in transforming a traditional game into an effective and contextually relevant numeracy learning strategy.

This study not only examines the improvement of numeracy skills but also explores the creative process of teachers in designing educational, innovative, and contextual play activities (AR et al., 2023). The findings are expected to contribute theoretically to the development of traditional game-based learning and practically to assist early childhood educators in designing creative, enjoyable, and effective learning strategies.

The objectives of this study are to describe teachers' creativity in designing and implementing the *congklak* game to support children's

numeracy skills at TK Jabal Nur and to describe how the implementation of the *congklak* game facilitates children's numeracy learning and cognitive development during classroom activities. This study also aims to identify creative learning strategies that enhance children's engagement, motivation, and numeracy skills through meaningful play activities (Syahrial et al., 2022).

Theoretically, this research is expected to enrich early childhood education literature, particularly regarding traditional game-based learning and the development of teacher creativity. Practically, this study may serve as a reference for teachers in designing innovative and enjoyable numeracy learning aligned with children's developmental characteristics (Roostin et al., 2023). In addition, this research is expected to contribute to early childhood education institutions in developing culturally based learning models that effectively enhance children's cognitive abilities.

Methods

This study employed a qualitative approach with a descriptive design to describe teacher creativity in improving children's numeracy skills through the *congklak* game. A qualitative descriptive design was chosen because it enables researchers to provide a comprehensive description of participants' experiences and educational practices in their natural setting (Sandelowski, 2000). This design is appropriate for exploring classroom practices and understanding the meanings participants assign to their experiences (Creswell & Creswell, 2018).

The research was conducted at TK Jabal Nur with one teacher and 20 children in Group B aged 5–6 years selected through purposive sampling. The teacher was selected because she was directly responsible for designing and implementing *congklak*-based learning activities. The children were selected because they were actively involved in the learning activities, were aged 5–6 years, and participated consistently throughout the study. Data were collected through observation, interviews, and documentation. Observation was used to examine teacher creativity in designing and implementing learning activities as well as the development of children's numeracy skills. Interviews were conducted with the teacher to obtain information regarding learning strategies and their implementation. Documentation was used as supporting data in the form of developmental records and learning activities. The research instruments were developed based on indicators of teacher creativity and children's numeracy skills, then validated through content validity procedures. The observation checklist included indicators of lesson planning, the implementation of *congklak*-based learning activities, and teacher–child interaction. The interview guide explored teachers' experiences, instructional strategies, and perceived challenges, while the documentation sheet covered lesson plans, learning activities, and children's learning records. Data analysis followed the Miles and Huberman model, including data reduction, data display, and conclusion drawing, with data validity ensured through source and technique triangulation (Asipi, 2022). Research

success was measured based on children's ability to recognize numbers, count objects, match numbers with quantities, and understand number sequences, accompanied by increased engagement in learning activities.

Result and Discussions

The findings at TK Jabal Nur indicate that teacher creativity in utilizing the *congklak* game was reflected in engaging learning activities that supported the development of Group B children's numeracy skills. Observations and interviews showed that children demonstrated greater interest and participation during learning activities involving the *congklak* game. The findings at TK Jabal Nur indicate that teacher creativity in utilizing the *congklak* game was reflected in engaging learning activities that supported the development of Group B children's numeracy skills. Observations and interviews showed that children demonstrated greater interest and participation during learning activities involving the *congklak* game. The data were obtained from observations of the development of children's numeracy skills during the learning process. Descriptively, the children's initial ability to recognize numbers and count objects was still in the category of developing as expected toward developing very well. Some children still experienced difficulties in matching numbers with quantities and understanding number sequences accurately. After the implementation of learning through the creatively designed *congklak* game, improvements were observed in children's engagement, counting accuracy, and understanding of number concepts in a more concrete

manner. The children showed high enthusiasm during the play activities, were able to count congklak seeds more accurately, and began to understand the relationship between number symbols and quantities.



Figure 1. Teacher and Children's Activities in the Congklak Game to Stimulate Counting Skills

The figure illustrates the active involvement of Group B children in learning counting skills through the congklak game. Children count and move the seeds sequentially and match the quantity with the holes of the board, enabling them to understand number concepts in a concrete and enjoyable way. This activity enhances motivation, concentration, early numeracy skills, and also supports children's social development and logical thinking.

Descriptively, observation records and assessment documents showed an increase in the average level of children's counting ability. These descriptive scores were used to support the qualitative findings rather than to test hypotheses or determine causal relationships. At the

initial stage, the mean score of children's counting skills was 62, categorized as developing as expected. After the implementation of congklak game-based learning, the average score increased to 84, categorized as developing very well. This improvement is evident in indicators such as recognizing numbers, counting objects, matching numbers with quantities, and understanding simple number sequences. In addition to the improvement in counting skills, children's engagement in learning also increased, as shown by active participation, sustained focus during activities, and the ability to follow game rules appropriately.

To ensure the credibility of the findings, the researchers examined the consistency of data obtained from observations, interviews, and assessment documents throughout the learning process. This process was conducted to verify that the descriptions of children's counting development were supported by multiple sources of qualitative evidence. Observational results revealed that most children experienced gradual progress in each counting indicator. No significant decline in children's development was found during the learning process. The consistency of improvement is reflected in children's ability to count congklak seeds sequentially, match quantities with number symbols, and understand simple addition concepts through play activities. This finding indicates that the application of the congklak game as a learning strategy has a sustained positive effect on the development of children's counting abilities.

A descriptive comparison was conducted to examine children's counting ability before and after the implementation of *congklak* game-based learning. The comparison was based on observation records, assessment documents, and interview findings to describe changes in children's numeracy development rather than to test statistical hypotheses. The analysis revealed a significant difference between the initial and final levels of children's counting skills. Most children who were previously in the "developing as expected" category improved to the "developing very well" category after participating in *congklak*-based learning. This improvement was observed not only in the cognitive domain but also in learning motivation, concentration, and cooperative skills during gameplay. The teacher's creativity in modifying game rules, providing guidance, and creating an enjoyable learning environment played a key role in enhancing children's counting abilities.

The research data also show that the use of the *congklak* game helps children understand number concepts concretely through direct experience. Children are able to count the number of seeds, distribute them evenly, and understand the relationship between quantity and number symbols. Game-based learning creates an active and enjoyable learning atmosphere, making it easier for children to grasp counting concepts. In addition, social interaction during gameplay supports the development of logical thinking and simple problem-solving skills.

The following table presents a comparison of children's counting

ability development before and after the implementation of the congklak game.

Counting Ability Indicators	Initial Score	Final Score	Category
Recognizing numbers	65	88	Improved
Counting the number of objects	60	85	Improved
Matching numbers with quantities	58	82	Improved
Understanding number sequences	63	84	Improved

The table shows that all indicators of children's counting ability improved after the implementation of learning through the congklak game. The highest improvement was found in the indicators of recognizing numbers and counting the number of objects, indicating that counting activities in the congklak game are effective in helping children understand number concepts concretely. Improvements also occurred in the indicators of matching numbers with quantities and

understanding number sequences, showing that the *congklak* game can stimulate the overall development of children's basic numeracy skills.

Overall, the research findings indicate that teachers' creativity in designing and implementing the *congklak* game was reflected in engaging learning activities and was associated with the development of children's counting ability. Observations, interviews, and documentation consistently showed that children participated actively and demonstrated better counting performance during *congklak*-based learning activities. Game-based learning creates meaningful learning experiences, increases children's engagement, and helps them understand counting concepts in a more concrete and enjoyable way. These findings suggest that traditional games, when creatively integrated into learning, can be an effective strategy for developing early childhood numeracy skills.

Discussions

The findings indicate that counting learning through the *congklak* game provided meaningful learning experiences for Group B children by engaging them directly in activities that involved observing, understanding, and applying number concepts in a concrete manner. Such experiences are consistent with the principles of experiential learning, which support children's understanding of quantities, number sequences, and one-to-one correspondence (Widjayatri et al., 2023). The findings also show that teachers' creativity in designing and implementing *congklak*-based learning created opportunities for

children to participate actively in meaningful numeracy activities.

The implementation of the *congklak* game is consistent with Piaget's cognitive development theory, which explains that children at the preoperational stage learn most effectively through concrete objects and manipulative activities (Alvisari et al., 2024). During the learning process, children counted *congklak* seeds, moved them sequentially, and matched the number of seeds with the game holes, allowing them to construct numeracy concepts through direct experience. These activities also supported the development of fine motor coordination, concentration, and accuracy (Astiti et al., 2024).

The teacher played an important role as a facilitator by providing guidance, encouragement, and reinforcement throughout the learning activities. Such support helped children develop logical thinking and simple problem-solving skills, in line with Vygotsky's concept of the zone of proximal development, which emphasizes the importance of adult assistance in children's learning (Anugrahno & Nugrahanta, 2024). Through continuous interaction, teachers guided children to understand counting concepts in a systematic and enjoyable way (Susanto et al., 2022).

The learning activities also provided opportunities for children to develop social skills through cooperation, turn-taking, rule-following, and communication with peers. These experiences fostered discipline, responsibility, and active participation during classroom activities (Warmansyah et al., 2023). Overall, the findings suggest that integrating

concrete learning media, play-based activities, and teacher guidance created a supportive learning environment for children's numeracy development. This supports the importance of designing child-centered and contextually relevant learning experiences that are aligned with the developmental characteristics of early childhood learners (Uhar et al., 2023).

Conclusion

This study concludes that teachers' creativity in utilizing the congklak game can improve the counting ability of Group B children at TK Jabal Nur. Play-based learning provides concrete experiences that help children understand number concepts, number sequences, and one-to-one correspondence more easily. Activities involving counting and moving congklak seeds also support improvements in concentration, accuracy, and fine motor coordination. The teacher's role as a facilitator, through appropriate guidance and stimulation, encourages children's active involvement and promotes the development of logical thinking and social skills. The use of traditional games as learning media has proven effective in supporting cognitive development and enhancing the quality of early childhood learning.

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